

Serial Number: Continuation of 10/747,647

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Title: Multiple Reflector Solar Concentrator Systems

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*Claim Listing*

(Currently amended) 1. A light energy trough concentrator comprising:

- a) a primary reflector having a linear concave configuration defining a first focal zone, and having a first longitudinal axis;
- b) a secondary reflector having a linear convex configuration and a non-convex face defining a second focal zone and having a second longitudinal axis in parallel alignment with the first longitudinal axis, the secondary reflector being disposed within the first focal zone; and
- c) a tertiary reflector having a linear non-imaging configuration defining a third focal zone and having a third longitudinal axis in parallel alignment with the first and second longitudinal axes, the tertiary reflector being disposed within the second focal zone, said third focal zone being disposed within the volume defined by the tertiary reflector;

wherein light energy reflecting from the primary reflector is concentrated and directed first to the secondary reflector, next concentrated and directed to the tertiary reflector, and finally concentrated and directed into the third focal zone, said third focal zone having an axial cylindrical shape into which the light energy is finally concentrated.

(Canceled) 2. The light energy concentrator of Claim 1 wherein the primary reflector has a parabolic configuration and the secondary reflector has a hyperbolic configuration.

(Currently amended) 3. The light energy concentrator of Claim 1 wherein the secondary reflector and the tertiary reflectors are shaped and disposed so as to reflect into the third focal zone at least 75 % of the light energy being reflected from the primary reflector.

(Original) 4. The light energy concentrator of Claim 1 wherein the primary reflector has a circular arcuate configuration.

(Original) 5. The light energy concentrator of Claim 1 also comprising a non-imaging quaternary reflector defining a fourth focal zone and having a fourth longitudinal axis in parallel alignment with the second longitudinal axis, the quaternary reflector being disposed on the non-convex face of the secondary reflector.

(Original) 6. The light energy concentrator of Claim 1 wherein the secondary reflector is selective, allowing a portion of light energy from the primary reflector to pass through and a photovoltaic device is disposed so as to receive such pass through light energy.

(Previously presented) 7. The light energy concentrator of Claim 6 wherein the light energy passed through is in a spectral range of substantial efficiency for the photovoltaic device to operate.

(Previously presented) 8. The light energy concentrator of Claim 6 wherein the light energy passed through is in the infrared range of the solar spectrum.

(Previously presented) 9. A light energy concentrating system comprising the light energy concentrator of Claim 1 and a first linear receiver disposed within the third focal zone, along the third longitudinal axis.

(Previously presented) 10. The light energy concentrating system of Claim 9 wherein water is passed through the first linear receiver to create steam.

(Original) 11. The light energy concentrating system of Claim 9 also comprising a means for rotating the light energy concentrator to track diurnal solar movement.

(Previously presented) 12. The light energy concentrating system of Claim 11 wherein the first linear receiver does not move.

(Previously presented) 13. The light energy concentrating system of Claim 9 also comprising a non-imaging quaternary reflector defining a fourth focal zone and having a fourth longitudinal axis in parallel alignment with the second longitudinal axis, the quaternary reflector being disposed on the non-convex face of the secondary reflector and a second linear receiver disposed within the fourth focal zone, along the fourth longitudinal axis.

(Currently amended) 14. The light energy concentrating system of Claim 9 also comprising a second pre-heating linear receiver disposed in a conductive relationship with the non-convex side of the secondary reflector.

(Original) 15. The light energy concentrating system of Claim 14 wherein the second receiver preheats a fluid passing through the first receiver.

(Currently amended) 16. A light energy concentrating system comprising the solar energy concentrator of Claim 15 65 and a first linear receiver disposed within the third focal zone, along the third longitudinal axis.

(Currently amended) 17. A light energy dish concentrator comprising:

- a) a primary reflector having a circular concave configuration defining a first focal zone and having a first longitudinal axis;
- b) a secondary reflector having a circular convex configuration defining a second focal zone, the secondary reflector being disposed within the first focal zone; and
- c) a tertiary reflector having a circular non-imaging configuration defining a third focal zone, the tertiary reflector being disposed within the second focal zone, said third focal zone being disposed within the volume defined by the tertiary reflector;

wherein light energy reflecting from the primary reflector is concentrated and directed first to the secondary reflector, next concentrated and directed to the tertiary reflector, and finally concentrated and directed into the third focal zone said third focal zone having a spherical shape into which the light energy is finally concentrated.

(Canceled) 18. The light energy concentrator of Claim 17 wherein the primary reflector has a parabolic configuration and the secondary reflector has a hyperbolic configuration.

(Currently amended) 19. The light energy concentrator of Claim 17 wherein the secondary reflector and tertiary reflectors are shaped and disposed so as to reflect into the third focal zone at least 75% of the light energy being reflected from the primary reflector.

(Original) 20. The light energy concentrator of Claim 17 wherein the primary reflector has a circular arcuate configuration.

(Original) 21. A light energy concentrating system comprising the light energy dish concentrator of Claim 17 and a means for tracking the diurnal movement of the sun attached to the dish concentrator.

(Previously presented) 22. The light energy concentrating system of Claim 21 also comprising a means for transducing light energy collected in the third focal zone.

(Previously presented) 23. The light energy concentrating system of Claim 22 wherein the energy transducer means is a heat engine.

(Original) 24. The light energy concentrating system of Claim 21 also comprising a receiver disposed within the third focal zone and a means for transferring thermal energy from the receiver.

(Previously presented) 25. The light energy concentrating system of Claim 24 comprising a plurality of dish concentrators and a means for connecting the individual thermal energy transfer means of each dish concentrator.